ABSTRACTS

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Examining the impact of informal contract between delivery of package by agents and their customers on shipping

(pages 161-172)

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Keywords: missing packages, delivery delay, damaged packages, informal contract.
Abstract: Given the challenges that businesses have when it comes to adjusting to current circumstances and improving their door-to-door delivery processes, it has been observed that delivery agents are the primary cause of troubles. Ensuring reliable transportation of air-to-sea cargo on a global level continues to provide a significant and difficult obstacle. The absence of a formal contractual arrangement between worldwide air and sea freight intermediaries and their clients has resulted in the prompt settlement of various concerns, such as missing merchandise, shipment delays, and damaged goods. The current study used a quantitative research approach to examine three hypotheses by considering four variables: "Assurance," "Legal Risk," and "Informal Contract" as the independent variables, and "Delivery of package by agents" as the dependent variable. The results of the study demonstrate that all of the independent variables exerted a significant influence on the dependent variable. The study revealed that "assurance" and "perceived legal risk," exert a beneficial influence on the establishment of informal contracts between Malaysian international air and sea cargo-agents and their customers in the context of shipping. The variable of "assurance" has a notable influence on the “Delivery of package by agents". The findings also carry substantial significance for customers, as it offer valuable insights into the uncertainties and obstacles associated with the informal agreements between Malaysian international air and sea cargo agents and their customers pertaining to shipping.

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Enhancing road service compliance: a robust penalty model for efficient maintenance management

(pages 173-184)

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Keywords: late penalties, long segment scheme, penalty formula, road preservation, road service level compliance.
Abstract: The long segment scheme allowing contractors to oversee road maintenance still has drawbacks. For example, non-compliance, such as delaying preservation for road issues, persists due to small penalties. This leads service providers to neglect road performance without objection to fines. This research aims to provide sufficient incentives for contractors to comply with the implementation of the late delivery penalty rate of road service levels. This research used an

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experimental method to test two formulas for the late delivery penalty rate of road service levels on two road sections in Central Java and Special Region of Yogyakarta, Indonesia. During the experiment, the time taken by service providers to fulfill the road service level on the two different road sections was measured and recorded. In the first road section, the previously used formula resulted in a penalty of only $7.39, while the developed formula yielded $122.17. Furthermore, in the second road section, the government formula led to a penalty of $375.89, whereas the developed formula resulted in a fine amount of $1,468.99. The results showed that the penalty value given to contractors for two road segment trials using the research formula was 16 and 4 times higher than the formula used by the Directorate General of Highways. In addition, the developed formula takes into account other road performance indicators such as potholes with a diameter < 10 cm and depth < 4 cm, ponding, and uneven patching.

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Talent identification for revolutionizing human resource management in Saudi Arabia's logistics industry

(pages 185-196)

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Keywords: logistics industry, talent pool, skills, competencies.
Abstract: The logistics industry in Saudi Arabia has seen a significant change, with national companies now focusing on hiring local talent to decrease their dependence on expatriates. Despite the increased demand for Saudization, logistics firms face difficulties in matching available local talent with industry-specific job requirements. This gap highlights the importance of connecting human resource development (HRD) with talent identification and assessment (TIA) practices. Study uses the DEMATEL technique to analyse the important factors that impact the effectiveness of Human Resources (HR) Departments in logistics firms in Saudi Arabia. A total of nineteen HR professionals from the logistics sector in the country took part in the study, offering evaluations on a Likert scale that ranged from 0 to 4 for each criterion. The research shows that the level of education has a strong impact on the potential and future development of job candidates in Saudi Arabia's logistics companies. Academic qualification, along with skills and competencies, greatly influences the evaluation of candidates. The criteria have influence values of 0.30559487, 0.007953708, and 0.628534572, respectively. In addition, the criterion of "Potential and Future Development" stands out as a significant factor that influences all others, except for "Skills and Competencies," with values exceeding the threshold of 0.926061035. Results highlight the importance of HR professionals prioritising cause criteria when selecting candidates and managing HR processes. By understanding and tackling these important factors, logistics companies can improve their methods of identifying and evaluating talent, ultimately boosting their organisational effectiveness and competitiveness in Saudi Arabia's ever-changing logistics industry.

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Optimizing scholarship distribution: a management information system approach

(pages 197-209)

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Keywords: scholarship, distributions, management information system, rapid application development.
Abstract: Baitul Mal Unisba (BMU), a zakat-based philanthropic institution, offers scholarships to its students, aiming not only to support their tuition but also to foster exceptional character development. This research addresses a significant challenge at BMU: the inefficiency in its administrative processes due to the absence of a robust information system. The study proposes developing a management information system to optimize scholarship distribution, precision, and accuracy of managing scholarship data - from collection and recording to processing and reporting. This improvement is anticipated to support more informed decision-making in scholarship distribution. The system was built using the Rapid Application Development process, which consists of three stages: requirements planning, workshop design, and implementation. The emphasis is on the optimal use of scholarship funds, time, and manpower. This research made an important contribution by developing a prototype of a web-based scholarship information system aimed at improving the effectiveness of distribution. The newly created scholarship management information system improves these processes by removing duplicate tasks and streamlining the overall workflow. It provides comprehensive data for the decision-making panel, including academic performance, activity reports, and scholarship quotas. Initial testing of the prototype shows that it meets all functional requirements, suggesting its potential effectiveness in resolving the current challenges in BMU's scholarship selection and distribution process.

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Value chain model of the smoked fish industry in small island

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Keywords: value chain, smoked fish industry.
Abstract: A fishing industry value chain model identifies production, distribution, and marketing stages that enhance the value of fishery products. It aids in cost breakdown, process optimization, and gaining a competitive advantage. The study links activities from fresh fish to smoked fish, tracking the entire process to the final consumer and identifying all involved actors. Quantitative and qualitative methods analyze data, determining production costs, selling prices, added value, and ratios in each distribution channel. Findings reveal six key players in the smoked fish value chain: fishermen, wholesalers, traders, processors/IKM, retailers, and consumers. Fishermen, wholesalers, and traders supply raw materials to processors/SMEs, which act as both producers and distributors. Retailers sell directly to consumers. Significant added value, exceeding 40%, suggests ample potential for growth in the smoked fish industry. The value chain model holds implications for fisheries in small islands with abundant natural resources, promoting increased efficiency, business sustainability, improved quality, social sustainability, enhanced added value, market development, monitoring, supervision, and strategic planning. Some policy recommendations from this study are expected to create a conducive environment for business sustainability, improved product quality, and added value in the smoked fish industry, as well as provide positive benefits to local communities and maintain market order.

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Increasing organizational agility and innovation performance of tour operators from the relational view perspective

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Keywords: collaboration, agility, innovation tourism, pandemic, supply chain.
Abstract: Previous research based on the Relational View has four major issues. The first issue is the need to stabilise relational rent in the long-term collaboration which can be addressed through involving management commitment. The second issue is the absence of implementations of non-financial relational rent such as innovation performance. The third issue is a significant fact that the research has not been conducted in crisis situations, where companies face limited resources and require both agility and innovation for survival. The fourth issue pertains to the absence of implementations regarding non-financial relational rent, such as innovation performance. To bridge this gap, in consideration of existing literature, this research is required to formulate a theoretical model that involves supplier collaboration, operational agility, management commitment, innovation performance, and the calculation on the effect of the relationship. This research applies structural equation modelling as an analysis tool with the support of AMOS software. The participants are leaders of tour operator companies based in Central Java Province and the Special Region of Yogyakarta, both are the major tourism destinations in Indonesia. Analysing 198 observations, the results demonstrate a positive impact of supplier collaboration on both operational agility and innovation performance. Management commitment has been demonstrated to moderate the impact of collaboration on innovation performance. This research encourages leaders of tour operator companies to engage in collaborations with their suppliers to achieve operational agility and improve innovation performance, particularly in facing the conditions caused by the Covid-19 pandemic.

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Determining consumer demand patterns for production planning using a data mining approach

(pages 233-243)

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Keywords: data mining, clustering, K-Means Algorithm, association, FP-Growth Algorithm.

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Abstract: The bread industry faces significant risks of losses in case of excess inventory. The initial stage in the K-Means Clustering Algorithm involves forming two clusters: C1 for slow-moving product data and C2 for fast-moving. Clustering products using the K-Means Algorithm resulted in Group 1 as slow-moving products with 44 types of items and Group 2 as fast-moving products with 15 types of items. It can be concluded that the bakery is experiencing losses due to an excess of overstocked products. After categorizing data into slow-moving and fast-moving groups, the subsequent phase involves employing the FP (Frequent Pattern)-Growth association rule algorithm to recognize consumer purchasing patterns. This algorithm aims to uncover relationships between items in a dataset and assess the probability of a person purchasing bread concurrently. By establishing a minimum support of 3% and a minimum confidence level of 30%, a total of 13 rules were generated, meeting the criteria for strong association rules. With this data, the store owner can specifically enhance inventory planning for fast-moving products by analyzing demand data and market trends. For slow-moving products, the store owner can adjust item placement or create product bundling with best seller items.

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Measuring productivity using Data Envelopment Analysis and Multiple-Objective Programming in flows, logistic and transportation

(pages 245-255)

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Keywords: effectiveness and efficiency, productivity indexes, Data Envelopment Analysis and Multiple-Objective Programming, flows, logistic and transportation.
Abstract: The logistic and transportation plays an integral part in maintaining a well-functioning organization. One of the most extensively used, original, famous, and popular non-parametric methods for evaluating the efficiency of organizations is the Data Envelopment Analysis, DEA technique. Suppose we can formulate the concept of effectiveness in the DEA technique. In that case, we will be able to measure the productivity of organizations since productivity is a blend of efficiency and effectiveness. Several studies have been developed, e.g., the “Malmquist Productivity Index” (MPI) and the “Lunberger Productivity Index” (LPI), which assess the productivity of corporations through the DEA technique, but these models do not display all factors in a system. Also, they need at least two periods to appraise productivity. Furthermore, their two components of efficiency and effectiveness are not considerably evident. Moreover, sensitivity analysis is not possible in these models. Therefore, a model was presented that can measure the relative productivity of decision-making units through the technique of DEA, simultaneously in a period through the two elements of efficiency and effectiveness with the feature of sensitivity analysis and its solution method is more reliable due to the use of multi-objective planning method. In addition, a case study was used to indicate the application of the proposed model, which demonstrated that a branch could be efficient but unproductive.

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The role of the Internet of Things in increasing the efficiency of logistics companies

(pages 257-267)

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Keywords: Internet of Things, logistical efficiency, logistics companies, Industry 4.0.
Abstract: Raising efficiency encourages logistics companies to use modern technologies. Using Internet of Things (IoT) devices improves logistical efficiency. The aim of the research is to determine the role of IoT in increasing the efficiency of logistics processes. The study was based on information about the logistics activities of the Supply Chain of one of the largest logistics companies in the world — DHL Group. The study covers the period 2009-2022. The research was conducted using linear regression models tested by the least squares method. The impact of the use of IoT devices was introduced into the model through the use of a dummy variable. It was established that the implementation and use of IoT devices has a positive, statistically significant effect on such indicators of logistical efficiency as Profit Margin and Operating Efficiency Ratio. It was proved that IoT positively affects logistical efficiency and does not entail reducing jobs, which is a socially important factor. The obtained results can be applied in developing and justifying the policy of implementing IoT in the activities of logistics companies. The conducted research opens up prospects for further studies, in particular regarding the impact of IoT on other performance indicators of logistics companies, particularly on their market capitalization.

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Health supply chain forecasting: a comparison of ARIMA and LSTM time series models for demand prediction of medicines

(pages 269-280)

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Keywords: LSTM, ARIMA, health supply chain, medicines, prediction model.
Abstract: The ever-accelerating revolution along with digitalization of the healthcare industry has revealed the power of machine learning and deep learning prediction models in addressing health supply chain logistic issues. The purpose of this study was to predict the demand for medicines using autoregressive integrated moving average (ARIMA) and long short-term memory (LSTM) time series models while comparatively analysing their performance for medicine demand prediction to optimize the flow of supplies in the health system. Using data generated in Rwanda public health supply chain, in our study focused on predicting the demand of the top five medicines, identified as highly supplied (amoxicillin, penicillin v, ibuprofen, paracetamol, and metronidazole). We evaluated the models' outputs by root mean square error (RMSE) and the coefficient of determination, R-squared (R^2). In comparison to ARIMA, the deep learning LSTM model revealed superior performance with better accuracy and lower error rates in predicting the demand for medicines. Our results revealed that the LSTM model has an RMSE value of 2.0 for the training set and 2.043 for the test set, with R^2 values of 0.952 and 0.912, respectively. ARIMA has an RMSE value of 9.35 for the training set and 8.926 for the test set as well as R^2 value of 0.24 and 0.16 for the training and test sets, respectively. Based on these findings, we recommend that the LSTM time series model should be used for demand prediction in the management of medicines and their flow within health supply chain due to its remarkable performance for prediction task when applied to the dataset of our study.

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Optimizing JIT production and maintenance strategies for material management in the presence of quality decline and random demand fluctuations

(pages 281-292)

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Keywords: Just-in-time production, quality, optimization, random demand, maintenance.
Abstract: Material management is a critical component of any organization, as it encompasses the efficient and effective handling of materials throughout the entire supply chain process. Just-in-time (JIT) strategies play a vital role in streamlining the supply chain process and minimizing waste. The paper examines the optimization of JIT production management, quality, and maintenance planning in the context of material management. An integrated model is proposed based on optimal control theory to formulate a set of innovative systems dynamics that consider quality decline in a stochastic context. The model also includes random demand fluctuations through a stochastic diffusion process. The objective of the model is to enhance company competitiveness by satisfying a service level constraint and jointly optimizing the JIT production and maintenance control parameters to minimize inventory levels and reduce the total cost. The findings reveal significant interactions between costs and control parameters of both JIT production and maintenance strategies due to their close relationship, leading to the conclusion that the development of an integrative model is more cost-efficient than managing them independently. A comparative analysis further enhances the study by highlighting the potential cost savings in implementing the suggested collaborative control strategy. Overall, the paper contributes to the literature on material management by addressing the research gap in the optimization of JIT production management, quality, and maintenance planning under a stochastic context.

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Strategic company sustainability: optimize firm resource management through innovation efficiency

(pages 293-298)

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Keywords: sustainable growth, innovation efficiency, corporate governance, resource management.
Abstract: This study intends to investigate the effect of a company's corporate governance aspects, measured by the size of the board of directors, on sustainable growth and the role of innovation efficiency as a moderating variable. The samples were taken from manufacturing companies listed on the Indonesia Stock Exchange (IDX) for the 2017-2021 period using purposive sampling. There were 44 companies that met the criteria. The technical analysis used is Partial Least Square (PLS-SEM) with WarpPLS 8.0 software, which is reliable for processing small samples. Stochastic frontier analysis (SFA) analysis through Frontier 4.1 is used for the measurement of innovation efficiency. The results of this study show that corporate governance has positive and significant effects on sustainable growth. Furthermore, innovation efficiency is a moderating factor that can strengthen the influence of corporate governance on sustainable growth. The novel of this study provides evidence relating to the importance of management in human resources and management in innovation to increase the company's productivity through innovation efficiency, which has an important role in increasing the company's sustainable growth.

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Physical internet - where are we at? A systematic literature review

(pages 299-316)

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Keywords: physical internet, sustainability, Industry 4.0, collaboration models.
Abstract: The Physical Internet (PI) concept represents a paradigm shift in how logistics and supply chain management can be conceptualised and implemented. Through a meticulous literature review, this study maps the current state of PI research, spotlighting the necessity for a deeper dive into unexplored areas. The analysis reveals significant opportunities for enhancing logistic efficiency and sustainability, providing a foundation for future research and practical applications. This work invites scholars and industry practitioners to explore the transformative potential of PI. In the face of the dynamically evolving discussion on the Physical Internet, this article offers an in-depth analysis of the literature on this concept, shedding light on current research trends in this new face of logistics, challenges, and unexplored areas. The focus is on optimization models, collaboration, and system architecture, identifying knowledge gaps in areas of human impact on the management of the future logistics system and flows, legal aspects, financial management, economic feasibility, social and environmental effects, readiness for cooperation, security, and cultural differences. The literature review emphasizes the importance of PI for sustainable development and the goals of Industry 4.0, pointing to its potential role in transforming global logistic processes. By examining challenges, proposing solutions, and highlighting the potential of PI principles in improving logistic processes, this work constitutes a valuable resource for researchers, practitioners, and policymakers aiming to understand and implement the concept of the Physical Internet.

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The logistics and sustainability in the European Union

(pages 317-323)

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Keywords: business logistics, sustainability, correlation analysis, cluster analysis, geographic analysis.
Abstract: The paper is focused on the issue of business logistics performance and sustainability of countries in the EU due to their constantly growing importance in the social, economic and environmental field. We assume a significant dependence between the mentioned quantities. To research the relationship between business logistics performance and sustainability, we used the data of the business logistics performance index and the sustainability index across each EU countries. The importance of the selected indices lies in the ability to identify possible opportunities and challenges of business logistics as a benchmarking tool to increase its performance. To assess the relationship of these researched parameters, we applied the correlation coefficient, cluster and geographic analysis to identify relatively homogeneous groups - EU countries - clusters with the greatest possible difference within the clusters. The results proved a statistically significant dependence between the performance of business logistics and sustainability in EU member states. From a geographic analysis perspective, we have identified a tendency to create geographically close groupings of EU countries within the examined parameters.

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Reliability analysis of marine diesel engines vs. industrial diesel engines: a comparative approach

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Abstract: The study presents a comparative analysis of the reliability of marine and industrial diesel engines, emphasizing the role of heat exchangers. Diesel engines in marine vessels and industrial applications face distinct challenges, influencing their reliability. This paper examines these differences, focusing on operational conditions, load profiles, redundancy, safety measures, and maintenance practices. Three types of heat exchangers (Fin fan, Plate, and Shell & Tube) are analyzed which are used in these engines. The assessment covers failure rates, Mean Time to Failure (*MTTF*), and the impact of independent and dependent failures on reliability. The study identifies unique failure modes like insufficient heat transfer, external leakage, parameter deviation, and structural deficiencies and their differing impacts in marine and industrial contexts. The research highlights the sensitivity of marine engine heat exchangers to seawater-

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ABSTRACTS

induced corrosion and fouling, affecting heat transfer efficiency. In contrast, industrial engines display varying failure characteristics due to system controls and operational parameters. A significant finding is the decrease in reliability over time for all heat exchanger types, underscoring the importance of maintenance and monitoring. Our results show slight shifts in failure rates due to equipment inefficiencies markedly affecting heat exchangers' operational lifecycles. The study concludes with a necessity for tailored maintenance strategies and design considerations for marine and industrial diesel engine heat exchangers. This focused approach offers insights into optimizing diesel engine reliability, particularly by understanding the main role of heat exchangers.

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